ANALYSE D'OUVRAGE

L'ordre des Pycnodontiformes, par Jacques BLOT. Studi e Richerche sui Giacimenti Terziari di Bolca V, 1987, 211 p., 37 pl. Museo Civico di Storia Naturale de Verona, Italie.

The pycnodonts were named and established as a natural group of fishes by Louis Agassiz in his great work *Recherches sur les Poissons fossiles* (1833-44), on the basis of specimens collected at Monte Bolca, Solnhofen and elsewhere. Where Agassiz described a family, we now recognize a monophyletic order with perhaps as many as 10 families, following 150 years of collection in Eurasia, Africa and the Americas. J. Blot treats the historical aspects of pycnodont research concisely but accurately, and with a generous bibliography opens the literature to interested investigators.

Pycnodonts are at the holostean grade of development. They existed from latest Triassic to Eocene times, primarily around the margins of Tethys, expanding and contracting their distribution as that great sea spread and withdrew. They lived mostly in marginal, lagunal waters which were shallow, warm and often associated with scleractinian and rudistan reefs. It is interesting to note that the earliest pycnodonts have been recovered from northern Italy (Norian deposits of Lombardy - Tintori, 1980) while the latest are also from northem Italy (Ypresian deposits of Monte Bolca - Blot, this work). The fish that J. Blot describes here represent the culmination of the pycnodont line, from which no Recent species are derived. Pycnodonts were pioneering, almost modem, benthic grazers, ultimately replaced by teleosts.

The order of the work is to deal first with the well-known family Pycnodontidae. As J. Blot explains in the Avant Propos, Mademoidelle Catherine Voruz had accumulated many data and illustrations during the course of a doctoral program, so the first chapter is a collaborative effort.

The succeeding chapters are by J. Blot alone. In them he erects two new families (Palaeobalistidae - Chapter II ; Nursalliidae - Chapter III), considers the mélange of species previously described as *Palaeobalistum* (Chapter IV) and arrives at certain conclusions (Chapter V).

J. Blot and C. Voruz have unequivocally resolved the distinction between *Pycnodus platessus,* as recognized by Agassiz (1833-44) and *P. gibbus,* as derived by Heckel (1856) in favour of the view of Agassiz that *gibbus* was a juvenile form. A thorough allometric analysis revealed the growth sequence of *P. platessus* and reduced *gibbus* to synonymy. That, by itself, is an important contribution.

J. Blot has also approached the problem of *Palaeobalistum,* which has housed a confusion of dissimilar species. Once the type (= lectotype) was established, distinctions could be made on the basis of strong morphological characters. A similarity of body shape as a unifying character is replaced by comparisons that note the presence or absence of a temporal fenestra (la fosse supratemporale), the ossified tendinous extension of the parietal, the form and pattern of scales, and the structure of the caudal skeleton (le complexe urophore). From this analysis *Palaeobalistum* emerges to comprise the two species *orbiculatum* and *zignoi* (sp. nov.) in the Palaeobalistidae (fam. nov.). A new genus *(Nursallia)* and family (Nursalliidae) are proposed to accommodate a new species (*veronae*) as well as the former *P. goedeli, P. flabellatum* and *P. gutturosum. P. ponsorti* and *P. bassanii* are referred to *Coelodus,* while *P. libanicum* and *P. dossantosi* are left indeterminate. Problems remain with this cluster of fishes, as J. Blot acknowledges. There are apparent incongruences to complicate analysis of relationships, but, as is ever the palaeontologist's hope, they may be resolved eventually by the discovery of better-preserved specimens in which previously unclear structures may be seen, e.g., pelvic fins, details of skull structure.

In his Conclusions J. Blot deals with a number of skeletal structures of particular significance in the phylogeny of the order. The Monte Bolca fauna provides a limited sample of pycnodont diversity and, as such, does not provide a strong base from which to generalize about pycnodont affinities. Studies in progress promise to show the relationships of pycnodonts among the Actinopterygii and to grant them a higher status than previously has

L'Ordre des Pycnodontiformes is an important contribution to palaeoichthyology, satisfying a major requirement of science in that it increases our understanding of the subject while simultaneously opening the horizon to broader exploration with new questions. It is a worthy successor to the previous studies of Monte Bolca fishes by J. Blot, released under the same imprimatur.

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